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ORATION

DELIVERED BEFORE

THE ALUMNI ASSOCIATION

OF THE

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA,

ON THE EVENING OF

Thursday, April 7, 1887,

BY

DUDLEY S. REYNOLDS, A.M., M.D.,

LOUISVILLE, KY.



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BY DUDLEY S. REYNOLDS, A.M., M.D.,
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COMING to the chief centre of learning in the United States to discuss questions of education, I know requires some degree of boldness, not to say self-assurance, lest the memories of Rush, Physick, Meigs, and Gross may rise up in the minds of those who are assembled in this temple of learning to confound my speech and make my poor utterances seem contemptible in comparison.

The importance of my theme, and the interest I naturally hope to awaken in the minds of this audience, embolden me to make the attempt to discuss, in a few brief sentences, some of those great questions which have occupied the greatest intellects in the busiest moments of their most important and beneficent enterprises.

When anatomy was studied in a few of its meagre outlines merely, and for the most part in secret, there came forth a man named Monroe, in the great city of Edinburgh, where Benjamin Rush, Ephraim McDowell, Walter Brashear, David Hosack, and Ben Dudley received their first medical training, and with the force

of great eloquence and a thorough mastery of what appeared at that time all of the details of anatomy, investing the dry bones of the skeleton with a fascination but little less forcible than that with which the immortal Shakespeare has clothed the cowardly assassin of Duncan, Scotland's famous king. Monroe was so great in his style and manner of teaching that the medical school at Edinburgh became for the time the leading medical institution of the world. From that day to the present the study of anatomy has been rendered simple and easy.

An ambitious physician of that time, jealous of Monroe's great success and reputation as a teacher, built a hall in Edinburgh and established therein a museum of anatomy. To his amphitheatre he invited the students and practitioners of medicine to hear him lecture and witness his demonstrations. He rattled the dry bones before his audience with such energy, and spoke with such eloquence, that he soon robbed the great university of all its students at the time of the usual lectures on anatomy. This man's boldness in exhibiting the skeleton, and even the cadaver itself, for purposes of demonstration aroused great excitement, but the earnestness with which he prosecuted his work finally won for him that success he so much deserved.

This may be said truly to have been the very beginning of illustrative methods in medical teaching. It was a long time, however, before other branches of the curriculum advanced beyond the prevailing theories of a few leading men.

On the 9th of July, 1790, Dr. Benjamin Rush stood in the hall of the College of Physicians in this city and delivered an eulogium upon the life and character

of William Cullen, the author of a new system of medicine. Said Dr. Rush : "This illustrious physician was the preceptor of many of us ; he was, moreover, a distinguished citizen of the republic of medicine, and a benefactor of mankind ; and, although like the sun, he shone in a distant hemisphere, yet many of the rays of his knowledge have fallen upon this quarter of the globe. Dr. Cullen possessed a great and original genius in discerning the relation of distant truths by the shortest train of intermediate propositions. His imagination surveyed all nature at a glance, and, like a camera obscura, seemed to produce in his mind a picture of the whole visible creation. His knowledge was minute in every branch of medicine ; he was a great anatomist, and an ingenious physiologist ; he enlarged the boundaries and established the utility of chemistry ; he stripped *materia medica* of most of the errors that had been accumulating in it for two thousand years and reduced it to a simple and practical science."

At the time Cullen made his appearance as a teacher the doctrines of Boerhaave were universally prevalent ; Boerhaave believed all diseases depended chiefly on the presence of certain acrid particles in the fluids of the body, and in a departure of these, in point of consistency, from the natural state.

Says Dr. Rush : "Cullen's first object was to expose the errors of this pathology, and to teach the public to seek the causes of disease in the solids."

Cullen's theories concerning the nervous system so impressed his eulogist that he boldly proclaimed "no man would ever unravel the operations and the whole nature of the nervous system without being forced to

acknowledge that the foundation of his successful inquiries was laid by the discoveries of Cullen."

The pathies and isms arose, and flourished for the edification of imaginative people. The few facts pertaining to every branch of medical education, excepting anatomy and botany, were so scattered as to defy every attempt at establishing principles, until finally Billings came, and the new pathology of Simon opened up new fields for speculation and experiment.

Dissection became a recognized part of the curriculum, and was openly announced as part of the requirements in all the best schools.

John Hunter's great thirst for experimental knowledge had now well nigh taken hold of the world, when Jenner came as the apostle of a new creed, based upon the experiences of the humble dairymaids. Vaccination as a protective measure against the small-pox remains an unexplained fact.

Presently instruments of precision began to be employed; vivisections of inferior animals were made, and the science of biology began to receive fresh attention; the humoral pathology, homœopathy, Thompsonianism, and all the "isms" and "pathies" paled into so many dim shadows over the fields of former conquests.

The medical student now, instead of sitting patiently by the hour listening to the beautiful sophistry with which individual theories and hypotheses concerning the nature and character of disease were supported has, at length, come to the point where demonstration of the theories and illustrations of the methods of practice are demanded.

The growth of medical education, it may be said,

has been slow. Twenty-five years ago there were, indeed, but few schools in the country where clinical and laboratory instruction formed anything like a prominent feature of the curriculum. The result of these practical methods of inquiry and the substitution of the few demonstrated facts applicable to the study of disease has been wonderful. A great and new science of pathology is now established upon the ruins of Cullen's popular theory.

The great Pancoast comes no more to stand before you with burning lips and irresistible arguments, to convince you of the superiority of his method of treating wounds; in his stead, the gifted son invites you now to the dispensary and to the clinic-rooms, that you may see for yourselves the masterly touch of his cunning hand in the adjustment of fractured bones, or witness his skilful methods of staunching the flow of the crimson tide in wounded arteries. You are not asked to believe upon the mere statement of your professor of chemistry, whose beautiful experiment of the consuming powers of oxygen and the frigid powers of carbonic acid gas are, upon the one hand, the life-giving force in the atmosphere we breathe, and on the other, the death-dealing force in the dark recesses of subterranean caverns. He does not content himself with telling you that carbonic acid gas is evolved from the mixture of sulphuric acid and carbonate of lime; but proceeds at once to the demonstration, and, with the magical processes of his art, he compels every member of the class to become practically familiar.

In the pathological laboratory, which is an institution of comparatively recent device and origin, you now study in the dead subject the nature and extent of those changes wrought by disease.

Experimental research has at length brought to light the startling fact that nearly all of our diseases, and especially the contagia, arise from specific micro-organisms, which, although their life histories have been studied with great minuteness of detail, cannot with certainty be classified as animal or vegetable in their nature. A minute rod-shaped body, called by its discoverer, Dr. Robert Koch, the chief of the great "Gesundheits Amt." of the Prussian empire, the *bacillus tuberculosis*, is now universally recognized as the cause of all tuberculous processes in man and the inferior animals. It has likewise been discovered by experiment that this bacillus is wafted in the air; that it grows in lymph by preference, and when inoculated or injected beneath the skin, it passes into the blood-current, and there seizes upon the germinal matter, or sarcode of the white blood-cell, arresting the cell instantly in its course, causing it to assume enormous dimensions, interfering in that way by obstructing the blood stream, and, presently, when it ruptures to discharge its myriads of spore-cells, to attack in like manner contiguous leucocytes, until the current of blood in that tube is arrested. This of course speedily brings on those changes characterized by heat, pain, redness, and swelling.

Now, when the bacillus is breathed into the air passages, if the whole of the respiratory membrane be sound upon its surface, the bacillus will not grow, but will find a temporary lodgment in the mucus, and presently be snuffed up and hawked out, or coughed up and expectorated. If, however, these bacilli or their spore-cells lodge upon an abraded surface, where they gain ready access to the lymph-tubes, they

colonize and grow there, and, by slow invasion, the whole pulmonary lymph system may be destroyed. With these facts, we are at once prepared to appreciate both the means and the reason why tuberculous disease generally invades the respiratory organs first, and why tuberculosis as an inheritance generally proves fatal to the infant.

The specific cause of suppuration in wounds has recently been brought to light in the discovery of microbes, which collect in groups, and which, when assembled in large numbers, present a golden-yellow tint. This is called the "staphylococcus aureus," and to some recent experimental researches of Prof. Cornil, of Paris, and Prudden, of New York, we are indebted for the demonstration that suppuration in wounds is invariably the result of the presence of this microbe.

Scarcely less brilliant have been the discoveries in chemistry and physiology. Merck, of Darmstadt, has at last succeeded in producing, by synthesis, many of our most valued therapeutical agents, and in 1879 he brought forth a new product by this agency, which is now known and prized by every ophthalmic surgeon in the world.

In testing the refraction of the human eye it is necessary to suspend the focusing power, in order to secure accurate results. For this purpose the sulphate of atropinia, long in universal use, required, in many cases, from three to five days' constant use of the drug to bring on complete suspension of the accommodation, and then from twelve to fourteen days were required for the patient fully to recover from its effects. The hydrobromate of homatropinia,

made by the synthetical method of Merck, whilst at the same time free from toxical effects, is speedy and more uniformly efficient in suspending the accommodation than any drug hitherto employed for that purpose, complete suspension now being possible within the brief space of an hour and a half, and all signs of its effects disappearing uniformly within thirty hours. It is likewise powerful in the relief of pain, and may be instilled into the eyes of children with perfect impunity in solutions of the same strength as are used for adults.

Further, the manufacturing chemists now separate the active principle from the crude drug, and prepare our most potent medicines in granules, triturations, and compressed tablets, all divided for convenient use. With the exact knowledge now conveyed to the student of medicine in the clinic rooms and laboratories of our colleges, the minutiae of scientific processes must be mastered, and the graduate, armed with these powerful weapons of so many exact sciences, goes forth to practise in communities where general intelligence makes closer discrimination as to the qualifications of the medical practitioner than were made in former years. The aid of legislation has in recent years come forth as a thunderbolt from the people against empiricism and quackery.

In this great commonwealth your legislative authority has wisely ordered that no man shall practise without a diploma, duly signed by one of the lawfully constituted faculties of instruction in a regularly established medical college in Pennsylvania. In the old State of Virginia, and in some other States, diplomas are no longer recognized as license

to practise medicine, but are demanded as preliminary to the examination of the holder, who is an applicant to practise in such States.

Now, with these powerful agencies of the law encouraging the efforts of able and earnest teachers in the regularly established medical colleges of this country, there is no danger that too many people will qualify to practise the art of healing. There are of course many commercial schools throughout the country pretending to give instruction in medicine. These are found in most every State, and the holders of their diplomas may be found in our cities, driving the street-cars, washing bottles in suburban drug-stores, and, in many cases, pointing horseshoe nails, or gently guiding the brush of paint over cold brick walls of our houses. With the rapidly growing population of this country we have no excess of medical colleges, and there is, like Webster said to the student of law, always plenty of room in the higher walks of the profession. In the lower grades you shall gradually witness the decay that ignorance always suffers in the presence of scientific research.

Do not understand me to say that the practice of medicine itself shall ever reach the dignified plane of an exact science. The uncertain tenure of life, and the varying degrees with which the vital forces operate in the economy, taken together with the varying conditions in which they operate, make it impossible; yet, by the aid of experimental study, the present generation has witnessed the discovery of the cause of nearly all the infectious contagia; and, in their treatment, the ounce of prevention may now wisely be ordered. For most of them the pound of

cure has not yet been isolated. May we not hope that some one of these young gentlemen just admitted to the ranks of the profession this evening shall achieve this great goal for which we are all striving? May we not hope that, great as have been the giants in the medical profession in this metropolis, greater genius is now being bent into the same channels, and that the march toward perfection shall not be abandoned by a single one among them until the devotees of medicine shall be able to establish a universal science?

Fortunate are you, gentlemen, to have enjoyed the high privilege and distinguished honor of receiving your medical education in this noble institution; fortunate to have lived in this age of discovery; and, deriving your first lessons at the centre, may you march through every inch of the circumference to a brilliant and noble career.



